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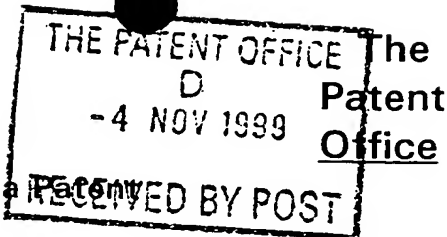
Dated

15th August 2000



Patents Act 1977

(Rule 16)



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P01/7700 0.00-9926037.4

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NEWPORT NP9 1RH

Request for Grant of a Patent

1. Your reference **P79975**

2. Patent Application number  
(the Patent Office will fill in this part) **9926037.4**

3. Full name, address and postcode of the or  
of each Applicant (underline all surnames)  
**Kiblo Limited  
15 Bryn Llewellyn  
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United Kingdom**

Patent Office ADP Number (if you know it)

If the applicant is a corporate body, give  
the country/state of its incorporation

**United Kingdom**

**7773401001**

4. Title of the Invention **Toy Building Blocks**

5. Name of your Agent (if you have one) **URQUHART-DYKES & LORD**

"Address for Service" in the United Kingdom to  
which all correspondence should be sent  
(including the postcode)

**Alexandra House  
1 Alexandra Road  
SWANSEA  
SA1 5ED  
United Kingdom**

Patents ADP Number (if you know it)

**1644005**

6. If you are declaring priority from one or more earlier Patent Applications, give the country and the date of filing of the or of each of these earlier Applications and (if you know it) the or each application number	Country	Priority application No. (if you know it)	Date of Filing (Day/month/year)
	<b>United Kingdom</b>	<b>9916095.4</b>	<b>10 July 1999</b>

7. If this Application is divided or otherwise derived from an earlier UK Application, give the Number and the Filing Date of the earlier Application	Number of earlier application	Date of Filing (Day/month/year)

8. Is a Statement of Inventorship and of Right to  
Grant of a Patent required in support of this  
request ? **Yes**

(Answer 'Yes' if:

- a) any Applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an Applicant, or
- c) any named Applicant is a corporate body.)

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

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Description

15

Claim(s)

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Abstract

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Drawing(s)

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Priority documents

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Statement of Inventorship and Right to Grant a Patent (*Patents Form 7/77*)

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Request for Preliminary Examination (*Patents Form 9/77*)

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Request for Substantive Examination (*Patents Form 10/77*)

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Any other documents (*please specify*)

0

11. I/We request the grant of a Patent on the basis of this Application

Signature

Date

URQUHART-DYKES & LORD

3 November 1999

12. Name and daytime telephone number of person to contact in the United Kingdom

Mr G M Davies  
01792 474327

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Toy Building Blocks

5

The present invention relates to toy building blocks. Particularly to building blocks suitable for connection to one another.

10

The educational value of children's building block systems is well known and a number of systems have been proposed and/or reached commercialisation.

15

An improved building block and system has now been devised.

20

According to a first aspect, the invention provides a toy building block including transverse face panels (preferably substantially perpendicular face panels) provided with connection formation means facilitating connection with an adjacently arranged blocks.

25

The arrangement of transverse/substantially perpendicular face panels provided with connection formation means facilitating connection with an adjacently arranged blocks enables blocks to be connected side by side as well as one upon another. This enables a highly versatile building block system to be achieved.

30

It is preferred that the face panels provided with connection formation means are edge connected. Desirably,

the block includes one or more further faces provided with connection formation means. Desirably the block comprises two sets of opposed face panels provided with connection formation means permitting adjacent blocks to be connected to four sides of the relevant block.

Desirably non-opposed face panels (and also preferably opposed face panels) are of substantially the same face area.

It is preferred that the building block comprises a substantially cube shaped block, preferably including four faces provided with respective connection formation means. Desirably at least one of the faces of the block is without connection formation means. Preferably two face panels of the block (most preferably opposed face panels) are without connection formation means. It is preferred that one or more face panels without connection means are arranged to carry an indicia, design, character or other graphic representation. This enables for example a large 'composite' picture to be built up from an assembly of blocks, or words to be formed using connected blocks each carrying a respective letter character.

It is preferred that the connection formation means of one of the faces is male and the connection formation means of another of the faces is female. Desirably opposed faces of the block are provided with connection formations of opposed gender.

element of a children's building block system. Other shaped blocks are envisaged falling within the scope of the invention including for example triangular face panelled blocks and rectangular face panelled blocks having substantially perpendicular surfaces respective connection formation means.

According to a further aspect the invention therefore provides a toy building construction system or kit comprising a plurality of building blocks according to the first aspect of the invention.

Desirably, the connection formation means for a respective face comprises an array of formations arranged to mate with a complementary array provided on an adjacently connecting block. The array preferably has a perimeter spaced inwardly from the edge of a respective face. The array preferably comprises formations of all male projections or all female recesses. Desirably, the formations comprising the array have an axis and are most preferably substantially circular in cross section along a plane substantially parallel to the respective face. Beneficially, the depth of the formations is less than the width dimension (e.g. the diameter) of the respective formation. The spacing between the formations in the array is preferably greater than the distance between the formations and their respectively closest edge of a respective face. Desirably an array comprises four formations arranged in a two by two matrix.

It is preferred that the toy block is substantially

hollow. Preferably the block comprises a plastics material, the block comprising, preferably moulded plastics material, the connection formation means preferably being integrally moulded with the respective face.

Desirably the block comprises an integrally formed shell comprising a plurality of integrally formed wall panels defining an internal void space and one or more openings into the void space, a separate end panel element (or end panel elements) preferably connects with the walled shell at the opening(s) so as to close the interior of the block.

Accordingly, a further aspect of the invention provides a method of manufacturing a toy building block, the method comprising:

i) forming a shell element including a plurality of integrally formed face panels defining an internal void space and an opening into the void space; and,

ii) securing a separate end face panel with the walled shell at the opening so as to close the interior of the block.

The walled shell element (and also preferably the end face panel elements) are preferably moulded in plastics.



The moulding preferably forms the connection formation means integrally with the respective faces.

Desirably the moulded shell element is formed having male connection formation means on a first face panel and female connection means on a second face panel. It is preferred that the moulded shell element is formed having connection formation means on opposed face panels, preferably male connection means on a first face panel and female connection means on the opposed face panel.

Desirably the shell element and the separate end face panel are provided with complementary engageable securing formations permitting the end face panel to be securely and preferably effectively permanently fixed across the opening of the shell element. Alternatively or additionally a bonding material (such as a curable bonding material) may be applied to the shell element and/or the end face panel element and/or the complementary engageable securing formations to facilitate fixing.

The complementary engaging securing formations are preferably configured such that either a push fit engagement or a snap fit engagement is provided. desirably, the complementary engaging securing formations are provided at the periphery of the face panel element and the opening of the shell element.

In a preferred embodiment the complementary engaging securing formations preferably comprise pins arranged to be received in complementary dimensioned bores in a push

fit engagement. Additionally or alternatively it is preferred that the complementary engaging securing formations comprise tongue and groove like mating elements (such as a tab receivable in a slot) extending along one or more edges of the face panel element and shell element. It is preferred that the tongue and groove like engaging formations are push fit engageable with one another.

In a preferred embodiment, the shell element comprises a substantially tubular element having opposed open ends, each of which is closed by a respective separate end face panel element. The tubular element preferably has four face panels defining a cube shape when the separate end face panel elements are fixed in position.

The separate end face panel elements preferably include connection formation means facilitating connection with an adjacently arranged blocks. It will be readily apparent, that the block and method of construction provided by the invention permit the shell element to be combined with various configurations of connection formation means (male female or none) enabling a maximum versatility for manufacture using basic components. Additionally face panels of various colours may be fixed to shell elements of different colours to enhance the visual stimulatory effect.

According to a further aspect, the invention provides an assemblage comprising a plurality of image elements having commonly coded image edge portions which permit image elements to be positioned in an edge adjacent relationship

in a plurality of configurations in which the commonly coded image edge portions of adjacent elements are matched substantially to one another.

5 Desirably, the image element comprises upper and lower edges and two side edges such that the image element is preferably rectangular or square. Desirably the upper edge is coded to match with the lower edge and the side edges coded to match one another.

10

It is preferred that the image elements are provided with first and second opposed edges of a first common image coding and third and fourth edges of a second common image coding.

15

Beneficially, the coded image element edge portions are coded imagewise such that the coding of the edge portions is effected by portions of a general image or scene depicted upon relevant image elements.

20

Desirably coded image element edge portions comprise a plurality of differently coded zones along respective edge portions.

25

The coded image element edge portions are preferably coded by means of colour (preferably coloured edge zones).

30

In a preferred embodiment the image element includes commonly coloured upper and lower edge zones and commonly coloured opposed side edge zones.

The coloured edge zones preferably comprise a backing to a primary image, character or other emblem presented on the element.

5 The image element is beneficially arranged to be mounted on a face panel of a toy building block, preferably a toy building block including connection formation means facilitating connection with an adjacently arranged blocks. Most preferably, the image element is arranged to  
10 be mounted on a face panel of a toy building block in accordance with the first aspect of the invention.

According to a further aspect, the invention provides a toy building construction kit or set comprising:

15

i) a plurality of a toy building blocks including face panels (preferably substantially perpendicular face panels) provided with connection formation means facilitating  
20 connection with an adjacently arranged blocks; and,

20

ii) a plurality of image elements for mounting on substantially planar faces of respective blocks, the image elements having commonly coded image  
25 edge portions permitting image element carrying blocks to be positioned in an edge adjacent relationship in a plurality of configurations in which the image edge portions of adjacent  
30 elements are matched substantially to one another.

30

In one embodiment, the image elements are adhesive backed permitting a user to apply a desired set of image elements to a set of blocks. Alternatively, the image elements may  
5 be printed or moulded onto the relevant face panel.

The invention will now be further described in specific embodiments by way of example only and with reference to the accompanying drawings, in which:

10 Figure 1 is a perspective exploded view of a first embodiment of toy building block according to the invention;

15 Figure 1a is a scrap sectional view of the face panel securing engagement connection with the shell element;

20 Figure 2a is a schematic plan elevation of a toy building block according to the invention having an end panel element not in position;

Figure 2b is a schematic side view of the building block having end panel elements not in position;

25 Figure 2c is a schematic sectional view of the securing bore of the shell element;

Figure 3a is a schematic plan view of a first end panel element (moulded with an integral array of male studs);

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30 Figure 3b is a schematic side view of the end panel

element of Figure 3a;

Figure 4a is a schematic plan view of a second end panel  
element (moulded with an integral array of female  
recesses);

Figure 4b is a schematic side view of the end panel  
element of Figure 4a;

Figure 5 is a schematic part sectional view of a securing  
fixing pin carried by the face panel elements;

Figure 6 is an exploded perspective view of an alternative  
embodiment of building block according to the invention;

Figure 7 is a schematic view of a building block carrying  
an exemplary image element for use in creating an  
assemblage according to the invention;

Figure 8 is a schematic view of an array of connected  
blocks (including the block of figure 7) in an assemblage  
according to the invention; and,

Figure 9 is a schematic view of the array of blocks in  
figure 8 connected in an alternative assemblage  
configuration.

Referring to the drawings, and initially to Figure 1, the  
children's toy cube building block (generally designated  
1) comprises a tubular moulded plastics body 2 having  
integrally moulded face panels 2a, 2b, 2c, 2d defining a

unitary wall around an internal void region. Face panels 2b and 2d are provided with respective two by two arrays of block-to-block connection formations, panel 2b being provided with all-male cylindrical projection studs 3 and face panel 2d including a corresponding array of cylindrical recesses 4. The shape, dimension and spacial configuration of studs 3 and recesses 4 is such that the array of studs 3 on face 2b of first toy building block can matingly engage in releasable push fitting engagement with a complimentary array of recesses for an adjacently connected building block. Similarly, recesses 4 on face panel 2d receive an array of studs on a further adjacently connected building block.

An important feature of the invention is that, for the moulded, substantially hollow, tubular element 2, the array of male studs 3 is provided on an opposed face to the array of female recesses 4. This enables the tubular element to be moulded using relatively standard plastics injection moulding techniques.

A recessed shoulder 4 is provided around each respective open end of the tubular element 2, the recessed shoulder being enlarged at respective corner bosses 5, each of which is provided with a blind bore 6. The upper surface of the shoulders 4 are provided with respective elongate slots 11.

Separate end face panels 7, 8 of moulded plastics construction are provided with integrally moulded pins 9 shaped, dimensioned and configured to matingly engage in

push fit connection with respective blind bores 6 provided in the bosses 5 of the recessed shoulder 4. The longitudinal edges of the separate face panels 7, 8 are provided with downwardly extending integrally moulded tabs 12 shaped, dimensioned and configured to matingly engage in push fit connection with respective slots 11 provided in the recessed shoulder 4. When push fit mated into the respective bores 6 and slots 11, the pins 9 and tabs 12 ensure that the respective end face panel 7, 8 is securely (and effectively permanently) secured to the tubular element 2. As shown in figure 5, pins 9 taper outwardly from a root connecting to the panel element 7,8, to a head 15 chamfered to ease insertion into respective bores 6. The maximum diameter of the head of pin 9 is greater than the root diameter; such an outwardly tapering pin enhances the interference fit of pins 9 on bores 6.

The face panel fixing arrangement including the corner pins 9 and elongate slot and tab mating provides particularly good and effectively permanent connection between the shell element and the end face panels. The pins 9 and bores 6 ensure good connection force at the corners; the slots 11 and tabs 12 ensure good connection along the end face panel edges. The pull apart force required to separate the end panel faces from the shell element is significantly greater than the force required to separate adjacently connected blocks by disengaging a male stud array 3 from a female recess array 4.

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An important feature of the invention is the flexibility of the arrangement, in that respective end face panels 7,



8 may be provided with an array of male studs 3 or female recesses 4. This enables a "core" module comprising the tubular element 2 to be connected with end panels 7, 8 as required enabling a variety of different building block configurations and designs to be manufactured from a number of "core" elements. For example, blocks having from three male stud arrays and one female recess array to one male stud array and three female recess arrays are possible. It will also be appreciated that end elements 7, 8 could, additionally, comprise planar face elements (not including any male or female formations 3, 4). Additionally, the flexibility of the design enables end face panels 7, 8 of different colours, textures or other variables to be mated with the tubular element 2.

Referring now to Figure 6, there is shown an alternative embodiment of toy building block 101 according to the invention in which the tubular element 102 again includes respective arrays of male studs 103 and female recesses 104 provided on opposed faces.

The end face panels 107, 108 which connect with tubular element 102 (and thereby close the open ends) are provided at opposed edges with collar projections 109 which are arranged to slide over respective ramp formations 106 (provided on the internal faces of panels 102d, 102b), and snap back to a "normal" position abutting a rear shoulder of ramp 106. The abutment of collars 109 with the rear shoulders of respective ramp formations 106 substantially inhibits disassembly of the respective end face panels 107, 108 from the tubular element 102.

One or both of the planar face panels (for example panels 2a, 2c in figure 1) are typically provided with an image or character element. When upper or lower or side by side adjacent blocks are connected a character or image wall depicting a series of images or characters can be built up. Letter characters can be used to build up words and sentences and thereby aid in reading development of children.

Alternatively, adjacent image elements can be used to build up a composite image (in a similar manner to assembling a jigsaw puzzle). In a preferred embodiment the image elements in a set of toy construction blocks have commonly coded image edge portions permitting the images on the blocks to be assembled in a variety of different configurations whilst maintaining sense of the overall image. Such an arrangement is shown in figures 7 to 9.

The block shown in figure 7 has upper and lower fringe edge) zones of orange colour. All other blocks in the assemblages of figures 8 and 9 include corresponding upper and lower fringe zones of orange colour. This permits any of the blocks in the array to be connected with any other block in an upper or lower connecting position and the orange colour fringes will match up. The block shown in figure 7 has side edge connecting bands 22, 23 extending across the image and providing a backing scene to the primary images of the old man 24, bird 25 and tree 26.

The side edge connecting band 22 is yellow in colour; the side edge connecting band 23 is green in colour. All

other blocks in the assemblage arrays of figures 8 and 9 include corresponding yellow and green colour edge connecting bands. This permits any of the blocks in the array to be connected with any other block in a side edge to side edge connecting position and the yellow and green colour bands will match up.

This system has a benefit in that it is extremely easy for a child to achieve a progress result, and also begins to teach colour matching.

The use of a 'jigsaw' wall built up from image carrying elements using blocks having block to block connection formations on perpendicular faces enables a solid and sturdy image construction to be conveniently achieved.



FIG 1

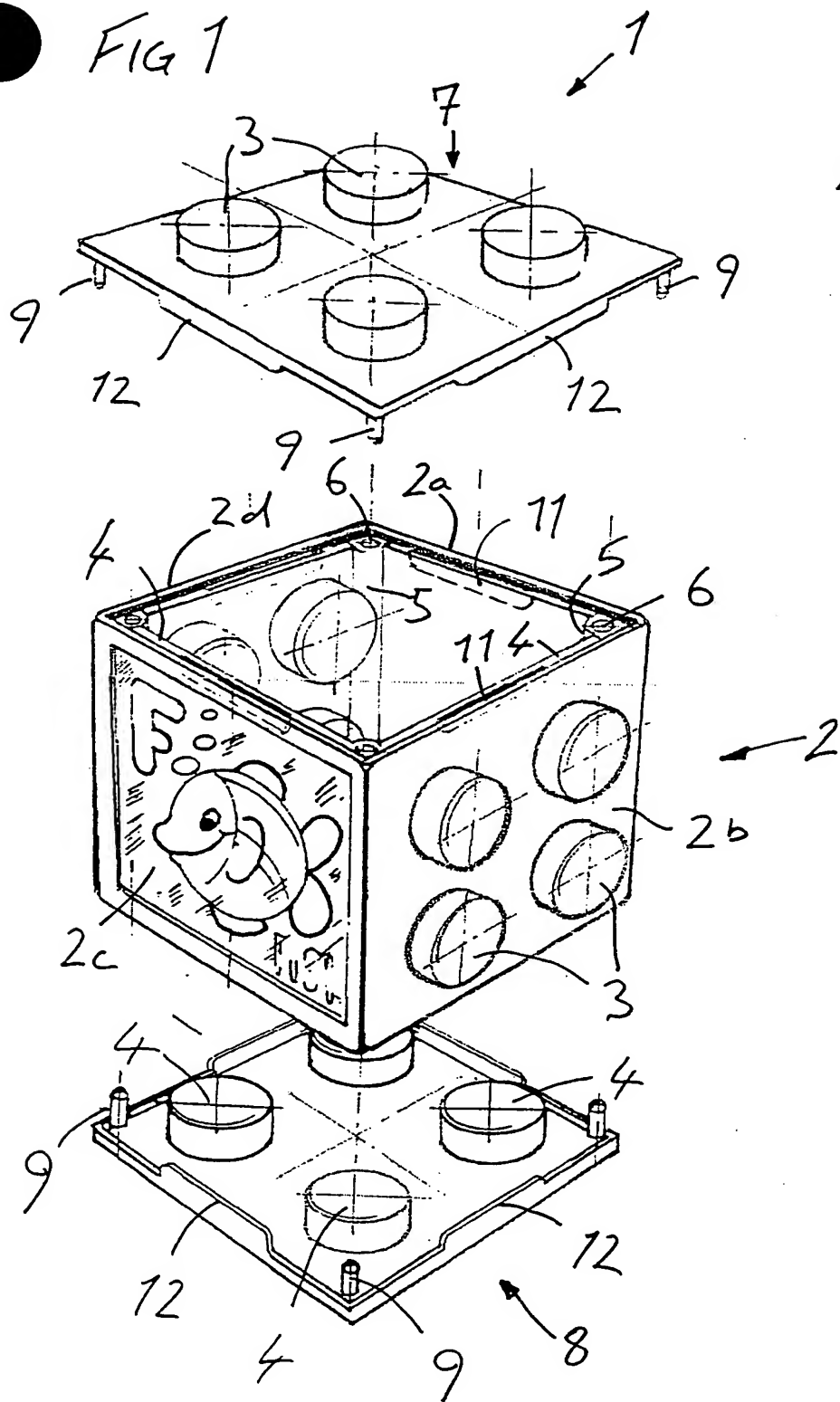


FIG 1a

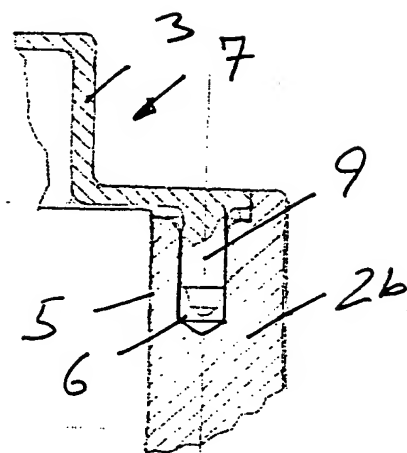




Fig 2a

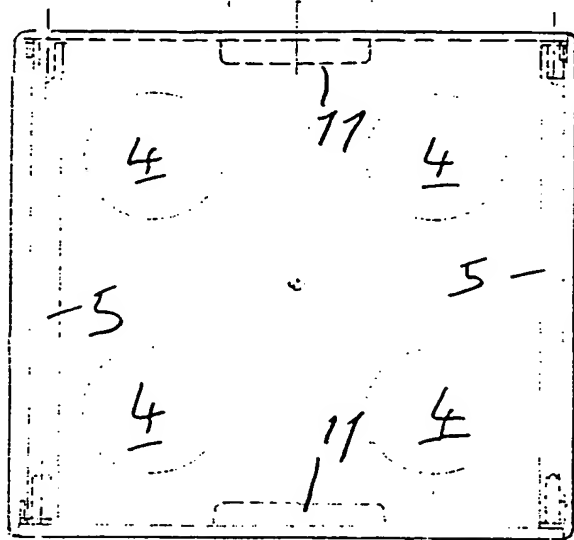
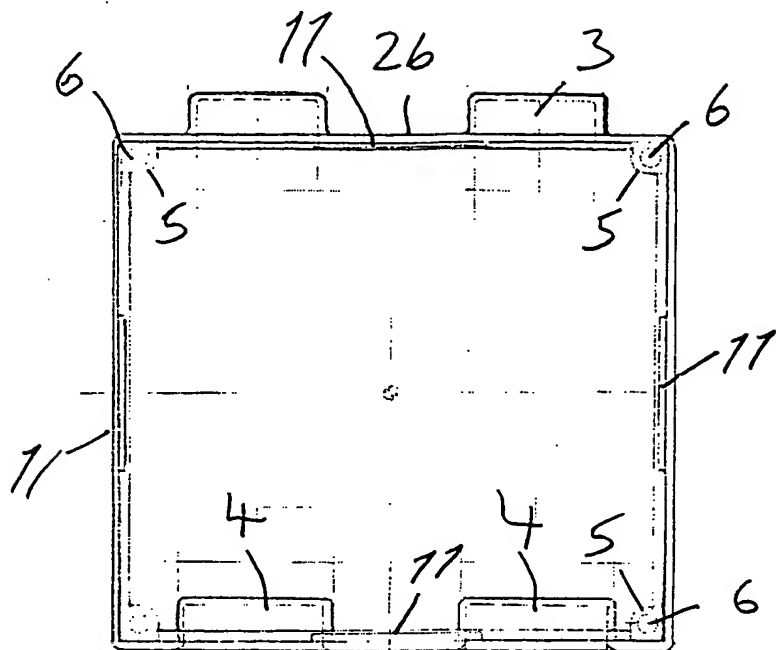


Fig 2b

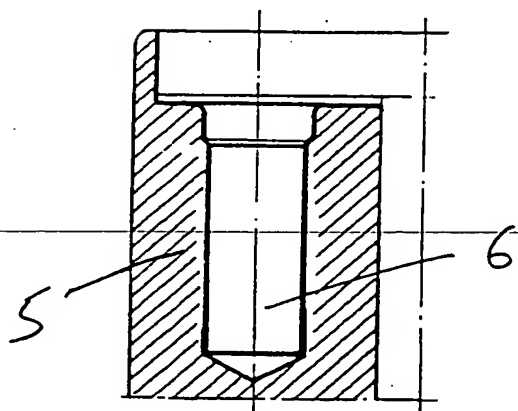


Fig 2c





FIG 3a

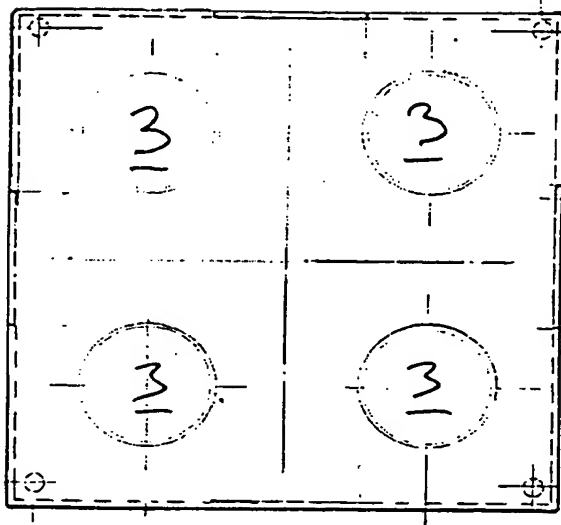


FIG 3b

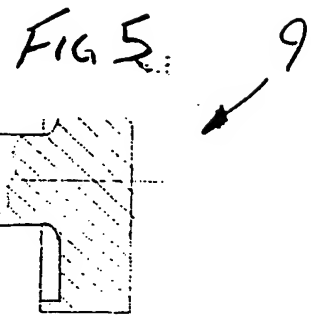
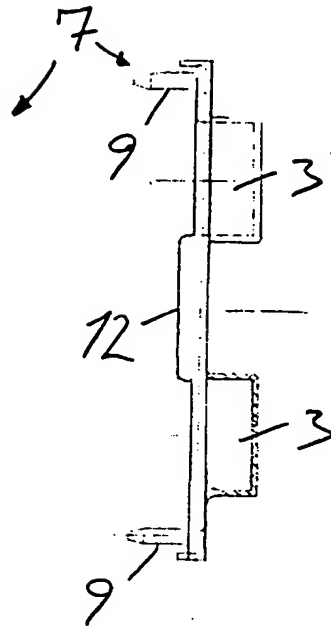


FIG 4a

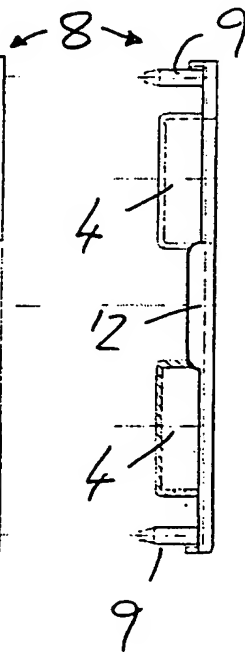
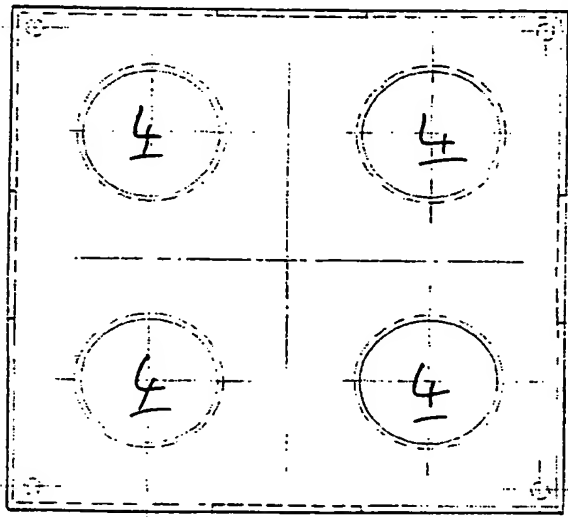


FIG 4b



FIG. 6

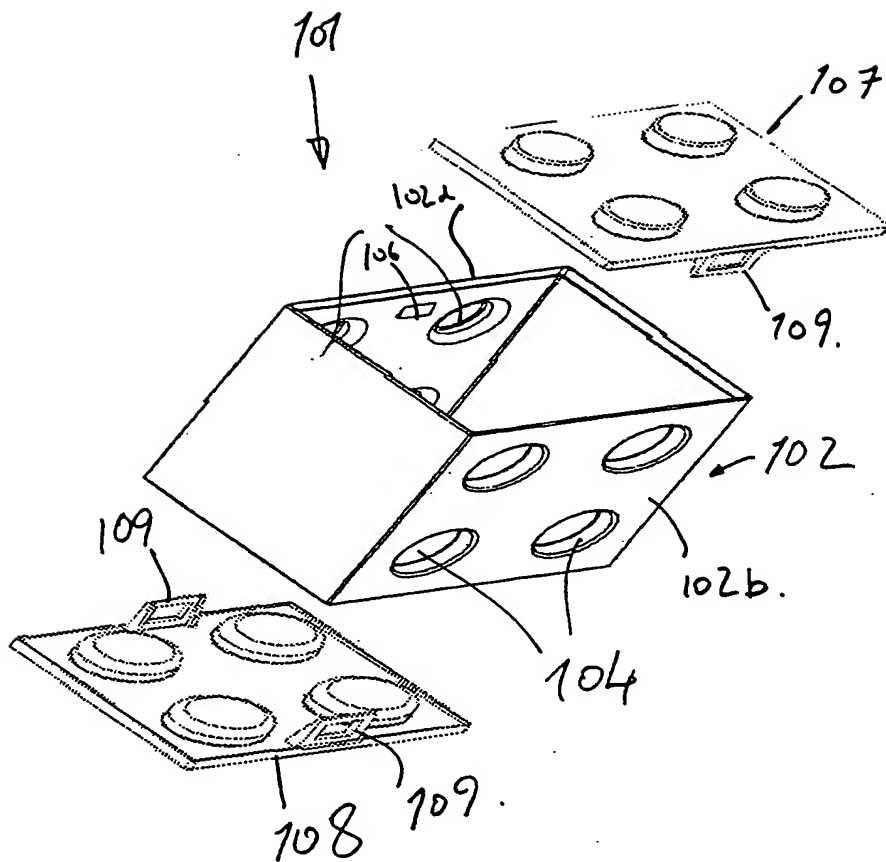
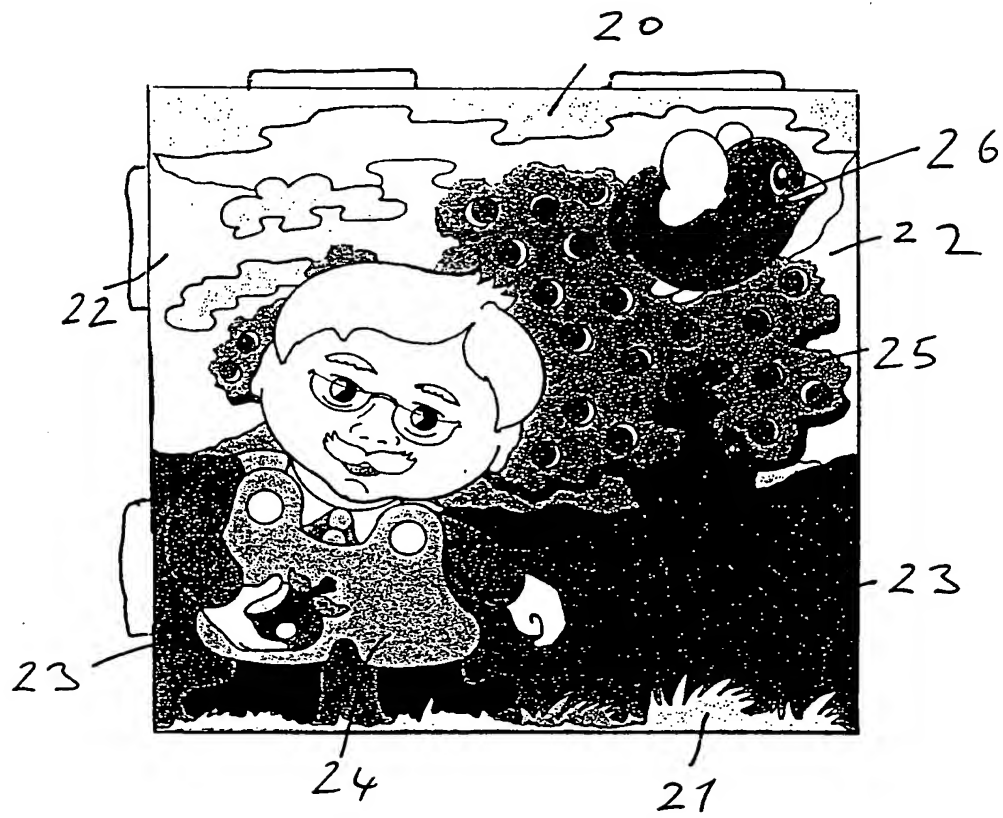




Fig. 7.





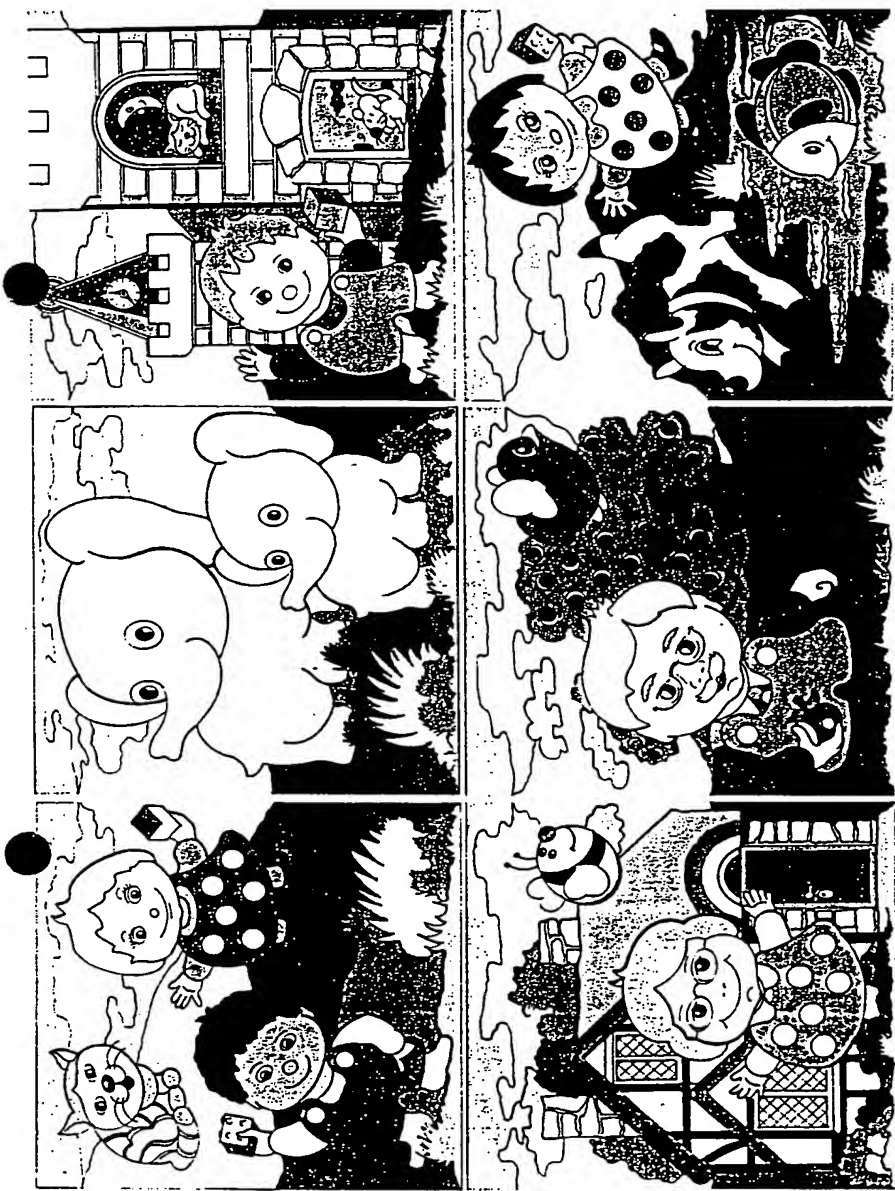
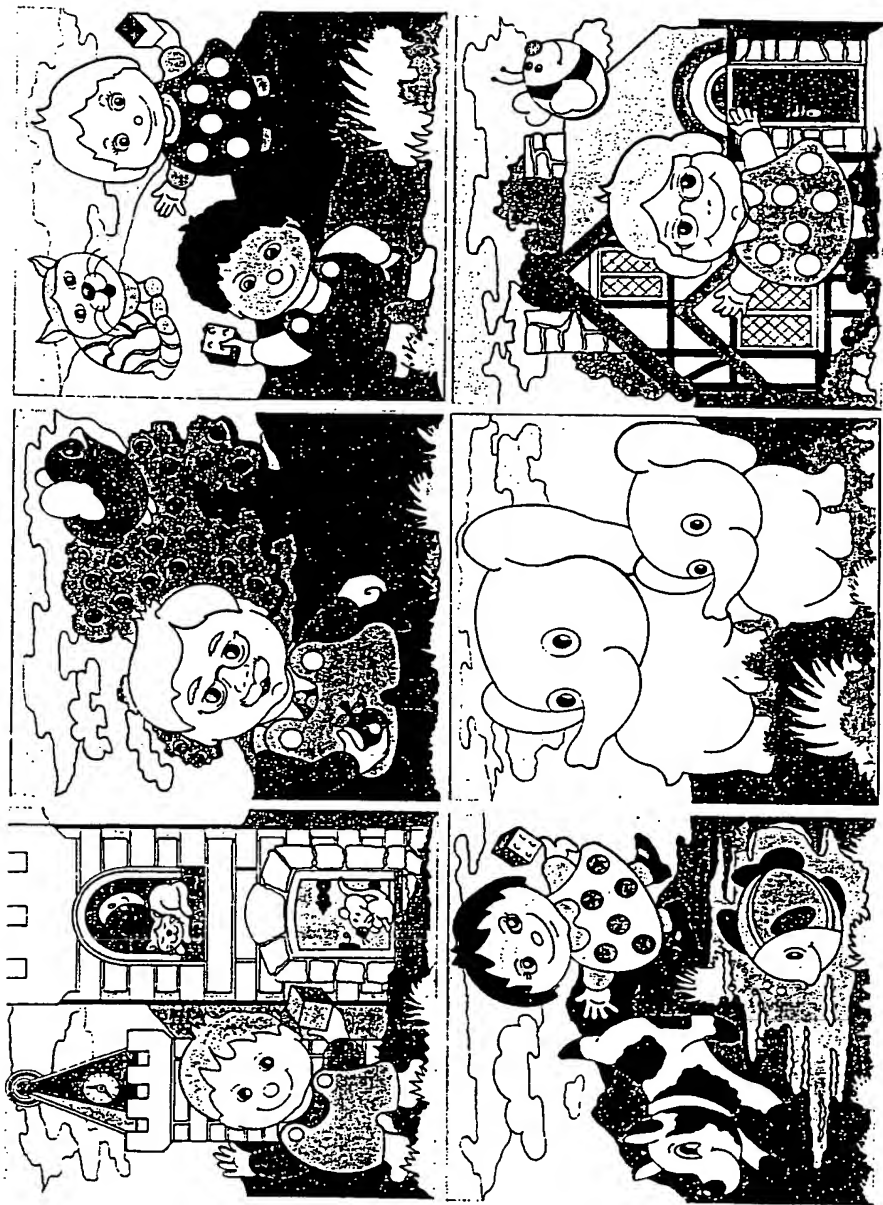






Fig 9



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Urquhart-Dykes + Lord.

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